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Interior of Idol Temple

OUR WORK.

VOL. I. NOVEMBER, 1876. NO. 6.

JAPAN.

BY J. W. DAVIDSON.

This island kingdom is situated on the east coast of Asia, and is composed of nearly 4,000 islands. It lies between the 30th and 40th parallels of latitude. It embraces an area five times as large as Indiana, and a population of more than 40,000,000. Japanese tradition says her history began with a dynasty of heavenly gods, who reigned 5,000,000 years, and were succeeded by a dynasty of earthly gods, who reigned 2,500,000 years, making Japan 7,500,000 years old. Rather ancient. It is evident their traditions are erroneous. Still we may penetrate these superstitions and approximate the settlement of Japan. The probability is, that Japan was settled 1,900 B. C., by a colony from what is now Chinese Tartary. Considerable progress had been made in the arts and in the science of government by the year 1,300 B. C., at which time the country was subjugated by a Chinese invasion, whose control lasted 575 years, and, in turn, was subdued by another Chinese invasion, led by Simna, known in Japanese history as the Divine Warrior, whose government exists to the present day.

The present Mikado is a descendant of Simna. When peace was fully established in his newly subjugated empire, he built a palace, 725 B. C., on the Island of Niphon, and also erected a magnificent temple to the Sun goddess Miako, and proclaimed himself emperor under the name Mikado. This title has been retained by his successors till the present time.

After his death he was worshiped as a god. His successors enjoyed peaceful possession of the throne for 500 years, when the Aino, or descendants of the original population, rose in mighty rebellion to cast off the oppressive Chinese yoke, but failed.

Simna, knowing full well the superstitious inclinations of his people, made the religions the prominent feature of his government; in other words, he formed a union of church and state, in which the state was subordinate. It having been demonstrated by the great rebellion that the Mikado had not sufficient military ability to render safe the existence of the government, he appointed four military men as generals, with certain political powers. This arrangement was continued, and through successive generations the generals gradually increased their political power until 1,150 A. D., during the reign of a very weak Mikado, when Yor-si-ti-mo, one of the generals, taking advantage of the Mikado's weakness, seized the reins of the government and declared himself Tycoon, or civil emperor. The Tycoon selected Yeddo as his capital. His descendants ruled until 1,334 A. D., or about 200 years, when the civil government was overthrown by an insurrection, whose leader

placed himself on the throne and transmitted it to his descendants, in whose possession it remained till about ten years ago.

The only knowledge Europeans had of Japan before the sixteenth century, was obtained from Arabian geographers, and the great traveler, "Marco Paulo," who, on his return from China, in the thirteenth century, told many wonderful things of China and Japan, as told him by the Chinese.

The first Europeans who saw Japan were three Portuguese sailors who deserted their ship while in a Chinese port, then shipped on board a Chinese vessel, and on their first voyage were wrecked on the coast of Janego Island, which was the residence of the hereditary prince. The prince received them gladly, and gave them much information in regard to the arts, sciences, and government of Japan. The sailors returned to Portugal, their minds filled with visions of wealth which might be acquired by trade with their new-made friends. The king of Portugal quickly decided to make a treaty with the newly-discovered empire, and accordingly dispatched a small fleet to Japan. The Japanese accepted the proposal made, and a commercial treaty was formed. France and Spain, prompted by the success of Portugal, soon made similar treaties. Then followed a treaty with Pope Gregory XIII. For a time it seemed as if Japan were going to take rank among the nations of the earth. Just at this juncture an incident took place at Goa, in southern Asia, that demands our special attention, because it was so productive of disastrous consequences to the welfare of Japan. The incident was a meeting of a prominent Japanese and Francis Xavier. Through Xavier's labors the Japanese were led to embrace Christianity. Xavier at once proposed to his convert that they go to Japan as missionaries, which was readily assented to.

After receiving authority from the pope to found missions in Japan, he and his companion set sail for the island kingdom in 1549.

Xavier's success was marvelous. A great many of the royal princes and tens of thousands of the people accepted Christianity.

In 1562 the converted princes sent an embassy to Pope Gregory and Philip of Spain. The embassy, on its return, brought a large reinforcement of missionaries, and every thing seemed to indicate the speedy conversion of the whole empire. This, doubtless, would have been the result, but for the fact that Xavier and his co-laborers, true to their training, began to intrigue for political power, flattering the Christian princes that it was their duty to God and the cause of Christ to repudiate their allegiance to the pagan emperor, and seize the reins of government, assuring them that the great papal nations of Europe would assist them with men and money. When this reached the ears of the Tycoon, or political emperor, he issued a proclamation restricting the power and privileges of the royal princes, and ordered, under penalty of death, every missionary to leave the empire. After this followed the destruction of the Christian churches, colleges, and school-houses.

The Tycoon made the conspiracy a pretext for a quarrel with the Mikado, or religious emperor, charging him with abetting the conspirators. The result of the controversy was, the Tycoon shut up the Mikado in his palace, and forbid him leaving the place under pain of death. The Tycoon being unrestrained, set about regulating the empire to suit himself, and was virtually an absolute

monarch. His order to expel the Christian missionaries was met by the Christian princes with resistance, and led to a fierce, bloody war of forty years, in which 2,000,000 perished, and the Christian population was exterminated. The hatred toward Christianity was so great that Japan suddenly ceased all intercourse with other nations, and for the next 300 years was a sealed nation.

In 1844, William of Netherlands made an attempt to negotiate a treaty with Japan and failed.

In 1846, the United States made a similar attempt and failed. In 1852, the United States made a second attempt through Commodore Perry, and a treaty of amity and commerce was entered into between the two nations. In a short time Japan made treaties with all the leading nations of the earth. It seemed that her ship of state had swept, under full canvas, into the current of progress, but still there were breakers ahead, as we shall notice.

Let us briefly examine the condition of Japan in 1852, the date of our treaty. There were two religions established by the laws of the empire.

1. *Sintooism.* This was the oldest, and consisted in the worship of the spirits of departed mortals, especially of heroes and all the deceased "Mikados."

2. *Buddhism.* This held that Deity is nothing, and that man's ultimate destiny is annihilation.

Of the two, Sintooism had the strongest hold. It was the creed of the Mikado, Tycoon, royal princes, officers, and a great majority of the people. Buddhism had been carried into Japan from China, and was embraced by many philosophers and a small part of the people. These bodies had numerous costly temples and cunning educated priests.

Japan had a settled government over 3,000 years, and all through these centuries her pagan civilization had been developing and bearing its fruits. Paganism had a large field in regard to time and subjects. It had been free from all conflicting interests; it had sown its own seed; it had cultivated the growing crop, and what a harvest it would yield we can not imagine. There was not a printing press in all the land; no schools for the masses. The emperor traveled in a closed palanquin. A herald preceded him, proclaiming his majesty's approach, and all persons prostrated themselves till the emperor passed. Only a few highest officers were ever permitted to catch a glimpse of the emperor. The great princes went yearly to pay tribute to the Mikado, and renew their allegiance. The emperor was seated upon his throne, in the rear of a curtain suspended from the ceiling to within a few inches of the floor, and extended from side to side of the room. The princes entered the room upon their knees and approached to within a few feet of the curtain and bowed their heads three times to the floor, retired backward on their knees out of the room. All these great princes ever saw of royalty was a few inches of the lower part of the throne.

For centuries no Mikado *living* or *dead* had ever been permitted to touch the profane earth with his sacred flesh. He was considered a god, and the Tycoon a semi-god. Such was Japan in 1852.

We will now observe the progress of Japan in less than twenty-five years. All treaties up to 1866 had been made with the Tycoon, under the impression that he was the supreme ruler. Subsequent events proved otherwise. Although the Tycoon had controlled the Mikado, yet the great masses considered the Mikado greater, and were willing to

assist him in enforcing his right and securing the supremacy. [We will refer to this again presently.]

Prior to the treaty no Japanese person was allowed to leave his country for any purpose whatever. Yet eight years after the treaty the Tycoon sent an embassy to visit the principal nations of the earth. After that, another delegation, in charge of the Tycoon's brother, visited the Paris Exposition and the capitals of Europe. Numbers of her leading statesmen have visited this and other countries to observe the customs of society, the workings of the political machinery of Christian nations, school systems, etc. A number of their priests were sent to the United States, England, and Prussia for the purpose of examining the Bible and the interpretation given it by Protestants.

The priests sent to Prussia reported that without deciding on the value or practicability of Christianity for Japan, yet it seemed to them certain that their pagan religion was doomed, and would soon exist as a thing of the past. At this time, to the outside world, Japan's prospects were bright; but at home was a sleeping volcano, reserving its terrible power for a favorable opportunity for activity. This existed in the long pent up wrath of the Mikado and his adherents, over the humiliation and degradation he received at the hands of the Tycoon. The Mikado, by virtue of his divine pretensions, possessed more influence with the people. He kept quiet in regard to the foreign policy of the Tycoon. The Tycoon alienated many strong friends by his liberal policy with foreign nations. Nearly all the princes espoused the cause of the Mikado.

In 1866, the issues being sharply defined, and both leaders determined, it was easy to find an opportunity to explode the magazine of passion and light the flame of civil war. Hostile armies sprang into existence. The contest was short and decisive. The Tycoon was defeated; his power destroyed, and his office abolished. The adjustment of difficulties at the close of this struggle was watched with considerable interest by the foreign nations, who were anxious concerning their treaties and the future foreign policy of the Mikado. As he achieved his victory over the Tycoon on the principle of non-intercourse with foreigners, it was reasonable to presume that he would declare null the treaties made by the Tycoon on the pretext of their not having been made by proper authority. The world was not kept long in suspense, for the Mikado immediately announced that he desired to cultivate the friendship of all foreign nations.

In 1869, the Mikado called a grand council of princes to consult about the welfare of the nation. The council advised the Mikado to make a thorough reformation in the foreign and domestic affairs. These reforms have been many and great.

We have thus reviewed Japan in the mystical past and in the near past, before her ship of state struck the strong current of Christian civilization. Let us now view her as she glides off in the current of progress, where thought crystalizes so rapidly.

Day after day brings us telegrams of only a few words, announcing facts, the consequences of which it would require volumes to fully explain. For example, a recent dispatch says the revenues for the support of the princes have been reduced nine-tenths of what they have been for ages. This assures us that feudalism is dead in Japan. The Mikado has abolished caste, and declares that worthy and qualified persons of any

nation will be appointed to places of trust and profit in Japan.

Recently the department of religion was abolished, and that of education created. The law which made Buddhism the state religion is abolished. This cut off the priests from support by the public treasury. The priests have been required to pay the cost of the temples built at the government's expense, an amount of over $10,000,000. This left Japan with only Sintooism, of which the emperor was the head. It was thought that Sintooism would remain untouched, but the emperor astonished the world by abolishing it as a state religion, and depriving its priesthood of their support from the treasury. He also ordered the destruction of all obscene images and pictures in the temples, on the altars, and public places.

Now, if his edict could only reach some of our galleries of "high art," all lovers of the chaste and pure would give him a vote of thanks. The laws interdicting Christianity, which had been kept for ages posted up in public places, are now removed. Still we can not say that Christianity is perfectly free in Japan. The emperor was *more* than willing to admit Christianity till the pope was declared infallible.

The sad experience Japan had with Xavier led them to act with caution to prevent a repetition of the troubles of 300 years ago, by which Japan lost 2,000,000 inhabitants. In earlier ages, and up to within a few months, the emperor was not permitted to touch the earth lest he might be defiled. But in the transmigration through which Japan has passed, from her decrepit old age of heathen civilization to her new, vigorous youth of Christian civilization, great changes have been wrought. See the Mikado under the new order of things. He descends gracefully from his throne, steps out from his seclusion, and is seen by his subjects and foreigners. This same man, who a few years ago pretended to be a god, steps upon the vile earth, and to-day dresses in *store* clothes made in Massachusetts.

He was present at the opening ceremonies of the first rail road, and mingled freely with the people. The Bible society made him a present of a Bible. He received it kindly and said he would examine it for himself to learn what Christians believed. He intends to visit our Centennial to learn of our country something of what he has heard so much.

A few years ago there was not a light-house on the islands. Last year over twenty were built. They have railroads and telegraphs by the thousand miles.

Prior to the treaty Japan had no educational system. In two years the emperor built 2,500 school-houses and one grand central university. For teachers she drew upon the United States and other nations. David Murray, of the United States, was recently appointed Superintendent of Public Instruction for the empire.

Educate Japan and Romanism will fail to gain a foothold there, for Romanism can not live in the affection of an educated people. Educate Japan and she will shed rays of light upon the benighted millions on the continent hard by.

Permit me here to compare the pagan emperor with the so-called Christian pope. The emperors, since the days of Simna, the warrior, has been worshiped as a god on earth—so has the pope. The Japanese worshiped the spirits of the departed—so do the followers of the pope. The pagan emperor had the power to name persons whose departed spirits should be worshiped—so does the pope cannonize saints to be wor-

shiped. So far there is considerable similarity, but there is much that is contrasting.

After the last struggle between the Mikado and Tycoon, the Mikado, in the grand council of princes, delivered an address in person, and declared openly that he was not a god, but a man as they were, and in a moment the divinity of the Mikado vanished. The emperor proposed an entire reparation of church and state. About this same time the pope also called a grand council of his princes, and for what purpose? That he might declare, like the Mikado, that he was not a god. No! but for the very opposite—for the purpose of declaring him infallible. That he is a god! What a contrast! These men have had access to the Bible, and upon whose whole existence the effulgent rays of Christianity has been shedding a flood of light. These men stand up in this Christian age and ask the intelligent people of the earth to consider the pope a god. We answer, no; the pope is not a god, but is the fallible, failing pope.

Recently the pope added a number of names to the already large number of saints, and says to his people worship them, offer to them your prayers. If spirit-worship and homage to images is idolatry in the Japanese, what is it in Romanism? Is it not idolatry? It certainly is, and the Pope of Rome is as great, if not greater, idolater to-day than the Mikado of Japan. On the other hand the Japanese are turning from their spirit-worship and the altars, where their ancestors have for ages prostrated. The pope still insists on spirit and image-worship.

Not many months since a new treaty was entered into between Japan and the United States. Our embassadors were especially instructed to make no demands concerning religion in the treaty. But when the treaty was about concluded the Japanese commissioner asked, "What about religion in the treaty?" Ours replied they were instructed not to insert a religious clause in the treaty.

But what was the surprise created, when the Japanese said we want a religious clause in the treaty. We want your Christianity taught in Japan. We want your people, who may live in Japan, to have the right to practice, and teach your religion in our country. If we can not have this in the treaty, we will not make a treaty. Our commissioners asked, why do you desire it? One of them answered: I find in my part of the world, down in Arabia and Turkey, a form of Christianity which you call Mohammedanism. This is the lowest type of Christian civilization, and it is superior to the highest type of pagan civilization. Passing northward to Russia I find a higher type of Christianty, which you call the Greek church, and with it a higher civilization. Passing to Austria, France, and Italy, I find a still higher type of Christianity, which you call Romanism, and with it a still better civilization. Passing northward to Prussia and England, I find another form of Christianity, which you call Protestantism, and with it a higher state of civilization, a union of church and state. Crossing the Atlantic to the United States, I find a form of Christianity separate from the state, and with it the highest type of civilization upon the earth. That is the form of religion we desire.

The required clause was inserted, and the treaty ratified by both nations.

Two weeks ago the Japanese emperor issued a proclamation, setting apart one day in seven as a day of rest, and fixed the day to correspond

with the Christian Sabbath. All honor, then, I say, to the young emperor and his people. Japan is destined to be to continental Asia what England is to continental Europe. We may expect to hear the songs of Zion rising from millions of voices, and the people rejoicing in free government. This, we think, is the harvest the seed sown must yield. May the morning's sun of that day soon gild the island kingdom.

LIFE.

BY MRS. MARY E. FISH.

Day by day, the golden grains,
From life's sand-glass swiftly run;
Day by day, Time's faithful watch,
Ticks the moments, one by one.

Day by day, with quickened pace,
The misspent hours, onward flee;
Bearing in relentless grasp,
Sorrows for eternity.

Day by day, the silver threads,
With the golden interlock;
While the frosts of many years,
Glossy, raven tresses mock.

Eyes, as bright as early dew,
Flashing 'neath his burning gaze,—
When the eastern monarch's smiles,
Set the morning skies ablaze;

But the storm-clouds looming up,
O'er majestic brightness skim;
And Time's dusty fingers soon
Will the eyes' pure luster dim.

Soon the bounding pulse that sweeps
Life's warm current through the veins,
Held by icy clasp of death,
Will, and thought, and power, restrains.

Then, as drop the golden grains,
From the sand-glass, by the way,
Let each tiny one record,
Crosses borne from day to day.

While Time's faithful watch ticks on,
May the passing moments bear
Costly treasures heavenward,
On the wings of praise and prayer.

May the hours' perpetual strife
Be to reach the sacred goal;
And beneath love's downy wings,
Each can bear a trembling soul!

Fainting souls, whose weary flight,
Ceases ere the journey's done;
Tarrying in the narrow path,
Sinking downward, one by one.

Years are flying—stranger, thou,
Cheer the drooping Christian on;
Victory's nearing—onward! brother!
Christ is waiting thee to crown.

A VALUABLE BOOK.

BY PROF. L. F. WATSON.

Much merriment has been occasioned by Mrs. Partington's attempt to make the dictionary a reading book, yet, after all, the old lady had a pretty good idea of its use. We know that while the reader would find, as did Mrs. Partington, the story somewhat disconnected, still the time spent in its perusal would be well employed, and the work would prove to be any thing else than dull and uninteresting. The reader would indeed be very much surprised at the amount of information contained in Webster's Unabridged Dictionary, for few people know its value. It will answer almost any common question that arises in geography, grammar, chemistry, rhetoric, music, architecture, or mythology.

If there existed a desire to know something of the origin and growth of the English language, where could be found a better treatise to consult than Hadley's History of the English Language, which appears in the forepart of the Unabridged Dictionary. Again, the principles of pronunciation are worth a careful reading; the key is invaluable. We believe that in the department of names of fictitious persons and places the reader will find several pages of real interesting reading matter, and will thereafter be able to understand many allusions and expressions met with in general literature which before has been passed over unheeded, and consequently unenjoyed.

In the five pages devoted to signs used in writing and printing, what a vast amount of information is stored away for the seeker after knowledge in astronomy, botany, chemistry, mathematics, music, typography, etc. Nowhere else can this information be obtained in such a good form, and of such easy reference.

Nor is this all; almost any phrase in Greek, Latin, or modern languages have in this book a ready interpretation. As yet we have reviewed but a very small portion of the book; the great body of this "intellectual subscriber" is still unnoticed; over fifteen hundred pages are devoted to the definitions and etymologies of all the words in the English language, interspersed with thousands of illustrations. The notes accompanying the definitions, if gathered in one book, would make a very popular cyclopædia of general information.

The *Massachusetts Life Boat*, in speaking of Webster's Unabridged Dictionary, says:

"Every farmer should give his sons two or three square rods of ground, well prepared, with the avails of which they may buy it. Every mechanic should put a receiving-box in some conspicuous place in the house, to catch the stray pennies for the like purpose. Lay it upon your table by the side of the Bible—it is a better expounder than many which claim to be expounders. It is a great labor-saver—it has saved us time enough in one year's

use to pay for itself; and that must be deemed good property which will clear itself once a year. If you have any doubt about the precise meaning of the word clear, in the last sentence, look at Webster's nine definitions of the v. t."

In looking over the "question drawers" and "query boxes" of many of our educational journals, I find therein questions asked by teachers (who are well informed, and who, no doubt, possess this book) over eighty per cent. of which have their answers in the dictionary. If these same seekers after truth would devote one-third of the time consumed in asking questions of editors of school journals in studying the Unabridged Dictionary, they would gain much time and much more knowledge than they now gain. We here give a few examples. One asks:

"What is meant by the words *Ecce Homo?* It is Latin, of course, but I am not aquainted with that language. Please inform," etc.

If the inquirer had turned to the 426th page of the dictionary, he would have found the following complete answer:

"ECCE—home, n. [Latin *behold the man.*] (*Paint.*) A picture which represents the Savior given up to the people by Pilate, and wearing a crown of thorns."

Another, who signs himself a "Graduate" (a very indefinite word), asks:

"What is meant by those strange capitals, D. V., often placed in notices of lectures, meetings, etc., just following the date of the appointment."

Answer, found on page 1688, Webster's Dictionary:

"D. V. (*Deo Volente.*) God willing."

Another writes:

"I have searched many histories in vain to learn who Micawber was. Please give me his history."

Here is the answer as taken from Webster's Unabridged Dictionary, page 1576:

"MICAWBER, MR. WILKINS.—A prominent and celebrated character in Dicken's novel of 'David Copperfield;' noted for his long speeches, ambitious style, love of letter-writing, alternate elevation and depression of spirits, hearty appetite, reckless improvidence, and everlasting troubles, and for his constantly 'waiting for something to turn up.'"

"There never was a Mr. Micawber in nature exactly as he appears in the pages of Dickens; but Micawberism pervades nature through and through; and to have this quality from nature embodying the full essence of a thousand instances of it in one ideal monstrosity, is a feat of invention."—*Masson.*

On the opposite page of the dictionary we see, for the first time in our lives, a biography of "Mother Goose," which we can not refrain from copying.

"This 'Mother Goose' is not an imaginary personage, as is commonly supposed. She belonged to a wealthy family in Boston, Massachusetts, where she was born and resided for many years. Her eldest daughter, Elizabeth Goose, was married by the celebrated Cotton Mather, on the 8th of June, 1715, to an enterprising and industrious printer by the name of Thomas Fleet, and, in due time, gave birth to a son. Mother Goose, like all good grandmothers, was in ecstacies at the event; her joy was unbounded; she spent her whole time in the nursery, and in wandering about the house, pouring forth, in not the most melodious strains, the songs and ditties which she had learned in her younger days, greatly to the annoyance of the whole neighborhood,—to Fleet in particular, who was a man fond of quiet. It was in vain he exausted his shafts of wit and ridicule, and every expedient he could devise. It was of no use: the old lady was not thus to be put down, so, like others similarly situated, he was obliged to submit. His shrewdness, however, did not forsake him. He conceived of the idea of collecting the songs and ditties as they came from his good

mother-in-law, and such as he could gather from other sources, and publishing them for the benefit of the world—not forgetting himself. This he did, and soon brought out a book, the earliest known edition of which bears the following title: 'Songs for the nursery; or Mother Goose's Melodies for Children. Printed by T. Fleet, at his Printing House, Pudding Lane [now Devonshire Street], 1719. Price, two coppers.'" The adoption of this title was in derision of his mother-in-law, and was perfectly characteristic of the man, as he was never known to spare his nearest friends in his raillery, or when he could excite laughter at their expense.

The notes on Mother Carey, on the same page, are still more interesting.

A teacher of astronomy asks:

"Why is this sign (♌) selected as the symbol of conjunction, or meeting of two heavenly bodies?"

The answer is given under the head of signs used in writing and printing:

"The circle represents the Zodiac, or the heavens, and the little mark at the top the meeting of two bodies in the same point or place."

In the September number of that excellent journal, *The School Bulletin*, of Milwaukee, Wisconsin, we find the following question:

"(24.) In an old chemical receipt, one of the components mentioned is queen's yellow. I have explored five chemistries in vain to find what it is. Can you tell me?"

The editor, S. R. Winchell, answers as follows:

"(24.) It is the yellow sub-sulphate of mercury."—*Webster's Dictionary*, *p.* 1074.

I might thus extend these questions and answers to a great length, but these are sufficient to illustrate the value of this wonderful book as a general informer on an indefinite number of questions that puzzle the brains of the thinking portion of our community.

Not a day passes but that we turn its leaves for nice distinctions of meaning, good synonyms, pronunciations,—things essential to correct writing and speaking. It is indeed a rare case that we have sought the dictionary in vain for information on the ten-thousand subjects that arise in a teacher's experience.

In conclusion, then, we advise every one who has a Webster's Unabridged Dictionary to study it,—study it carefully,—study it often and long. To those who have it not, we advise an immediate purchase of one.

LESSONS IN ZOOLOGY.

BY PROF. D. J. EVANS.

CLASSIFICATION OF ARTICULATES.

The branch articulates contains three classes, and each class three orders, as follows:

First class—*Insecta*. Orders: 1. Insects. 2. Spiders. 3. Myriapods.

Second class—*Crustaceans*. Orders: 1. Decapods. 2. Tetradecapods. 3. Eulomostracans.

Third class—*Worms*. Orders: 1. Annelides. 2. Trematods. 3. Nematoids.

FIRST ORDER—INSECTS—REMARKS.

No animals among vertebrates present such interesting fields of study as the insects present. Their physical structure manifest the perfection of wisdom in Him who formed them, and their habits command the admiration of every one that studies them. Their strength, considering their size, is very much greater than the strength of man, considering his size. But the difference is not so fully comprehended by stating the ratio of size and strength, as by stating what man could perform

were he endued with powers equal, comparing the sizes, to the powers of some insects. Had he the same comparative strength that some of them have, he would need neither steam nor horse-power, neither derrick nor jack-screw, nor any other aid, to enable him to lift any weight under two or three tons.

Could he skip over the ground with the same comparative facility and celerity that the flea manifests, he would outstrip the most speedy express train. Had he the swiftness of some, the strength of others, the voracity of others, and the fecundity of some, his work and habit would be as follows: He would weave a net with material obtained from his own body. With this he would catch a bison, and with one hand drag it away to a suitable place, and in ten minutes bury it in the ground. Then, at the rate of a quarter of a mile at a leap, he would skip home to a dinner prepared by his wife, daughters, granddaughters, etc., to the tenth generation. At the table would be seated himself, wife, one hundred daughters, ten thousand granddaughters, one million great-granddaughters, etc., each brood a hundred times the preceding one. On the plate of *each* one of the 111,111,111,111,111,111,102 would be placed a whole large ox (broiled or roasted, according to taste), a few bushels of potatoes, turnips, krout, pumpkins, etc. Each one of the descendants would be an unmarried, *intacta*, imperfectly developed female, the progeny being a spontaneous production; but the offspring of the tenth generation would consist "mostly of boys and girls," and few neuters.

Did mankind grow considering the length of youth, as some insects do, considering their time of growth, a child weighing, when born, ten pounds would, when four years old, weigh two hundred pounds.

Among the features that are specially interesting, the insect's eye may be mentioned. Mammals and some reptiles are capable of moving the eyeball. The chameleon is the most celebrated for this. It can be wall-eyed, cross-eyed, or straight-eyed, as circumstances require. Birds' eyes are immovable, but the length and the flexibility of the neck enable them to turn their angle of vision toward objects in any direction. But insects' eyes are immovable and their necks inflexible. However, the deficiency is supplied through another contrivance. The organ of vision (for it is not an eye) is a collection of very minute perfect eyes, closely situated and so arranged that the group present a convex appearance. Thus, the axes of the eyes not being parallel, the insect is able to perceive objects in several directions at the same time. The number of these eyelets in one organ is always very great, in some species exceeding 25,000. Through a small magnifying-glass they are readily seen in the wasp and humble-bee.

None of the higher animals manifest the same tenacity of life that insects do. And if a cat has nine lives and an oppossum nineteen, a bed-bug has nine thousand, for it has lived six years without eating. It is aggravating to think, since these pests *can* live, without food, that they will persist in molesting people as they do.

Flies that have been frozen stiff and hard, have been thawed to life. When a fly is kept under water until it is apparently dead, it will, on being exposed for a few minutes to the sunlight, come to life. There are instances mentioned of insects that have been, for twelve months, kept in wine, coming to life. Not long since I saw, on exhibition by a veterinary surgeon, a few live

larvæ of the bot-fly, which the surgeon declared had been constantly kept for four years in alcohol. Once I cut the pedicel and neck of a wasp, severing the head and abdomen from the thorax. In forty-eight hours the three parts showed signs of life. Before sixty hours the head and thorax could not be excited to manifest life, but the abdomen still plied the sting in sixty hours after the amputation had been performed.

But the metamorphosis of insects is among the strangest phenomena of nature. Most of them have three stages of existence, and in each state the insect is so different from what it is in any other, both in form and habit, that it appears more like different species of animals than like the same animal in different stages. The caterpillar undergoes two transformations, and becomes a butterfly. The green worm often seen on the potato vine, changes into a beautiful moth, called the five-spotted sphinx. (The caterpillars that are this month so abundant around the building of Union Christian College, and in the halls, are the larvæ of next summer's butterflies. And the young ladies who kill them little consider that the "horrible thing" will next summer be an "awful lovely" butterfly.)

An insect begins life in the larvæ state, and during this it eats incessantly and grows very rapidly. The amount that some eat is almost incredible. A canker-worm will eat the parenchyma of an apple-tree leaf in about fifteen minutes, and will continue for a long time to eat at this rate.

All larvæ are wingless and worm-like. After eating for a certain length of time, the larvæ's appetite fails, and it crawls around apparently sick (as an Englishman would say), and seeking relief. This is the close of this stage, and a preparation for the next, or chrysalis.

When a suitable place is found, the worm, with a silken material from its own body, spins its winding-sheet (called cocoon.) When the shroud is properly adjusted and attached to some object, the chrysalis sleeps the sleep of death until the morning of its resurrection, when it will burst forth from the tomb a winged butterfly. The manner in which some moths burst their cocoon is worthy of notice, and will be mentioned in a future lesson.

Spare the caterpillar, for it is an emblem of humanity. In its crawling we see our struggling, in its cocoon we see our tomb, in its imago we see our angelic wings.

The pupa or chrysalis state of some insects lasts a few days only; of others, several months. In late spring, in summer, or in early fall, the last state or imago begins. In this, insects consider it vulgar to eat heartily and grow, as they do in the first stage; but they spend their time in drinking, and sipping honey, and mating. It is more like a prolonged honeymoon than it is like real life. Insects in this form of life almost verify the expression, "Living on love and honey."

[TO BE CONTINUED.]

"SURVIVAL OF THE FITTEST."—The ruin of three million men and two thousand crowns immortalize a Cæsar.

"My yoke is easy," but the yoking is often severe, especially when we are brought under it in affliction, and in the death of dear ones.

MUCH of the joy in heaven will be caused by the surprise in finding it heavenlier than imagined on earth. "Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love him."

CONVOLVULUS.

BY S. T. CLARK.

Out of the grave of sleep I rise;
  My soul goes forth to walk with God;
  He meets me in our paths, well trod,
And greets me with a sweet surprise.

He leads me to my garden tree
  Where never flower has bloomed before,
  And lo! the tree is covered o'er
With blossoms beautiful to see.

And every bloom a bugle seems;
  I half expect to hear them ring,
  Blown by the little elves that bring
An end to all our dearest dreams.

But quick this fleeting fancy flies;
  And these same bugles seem to me
  The speaking-trumpets of the tree,
Through which its prayers and praises rise.

The still small voices upward go
  From throats of purple, white, and red;
  God understands what words are said:
He hears the morning-glories blow.

But by a breath of sovereign might
  These speaking-trumpets seem to be
  Made listening tubes that this deaf tree
May hear the words of God aright.

Dear Friend, who walking hand in hand
  With me, have talked with all the flowers,
  And counted not the time by hours
While life and love were in the land;

I bring you one convolvulus;
  And pray that you receive the light
  To read its painted page aright—
The lesson heaven designs for us.

Not only should our prayers arise
  To God, in whom our souls rejoice,
  But we should hearken for his voice
And own his answers to our cries.

—*The Western.*

THE TACHYPOMP.

A MATHEMATICAL DEMONSTRATION.

There was nothing mysterious about Prof. Surd's dislike for me. I was the only poor mathematician in an exceptionally mathematical class. The old gentleman sought the lecture-room every morning with eagerness, and left reluctantly. For was it not a thing of joy to find seventy young men who, individually and collectively, preferred x to XX; who had rather differentiate than dissipate; and for whom the limbs of the heavenly bodies had more attractions than those of earthly stars upon the spectacular stage?

So affairs went on swimmingly between the professor of mathematics and the junior class at Polyp University. In every man of the seventy the sage saw the logarithm of a possible La Place, of a Sturm, or of a Newton. It was a delightful task for him to lead them through the pleasant valleys of conic sections and beside the still waters of the integral calculus. Figuratively speaking, his problem was not a hard one. He had only to manipulate, and eliminate, and to raise to a higher power, and the triumphant result of examination day was assured.

But I was a disturbing element, a a perplexing unknown quantity, which had somehow crept into the work, and which seriously threatened to impair the accuracy of his calculations. It was a touching sight to behold the venerable mathematician as he pleaded with me not so utterly to disregard precedent in the use of cotangents; or as he urged, with eyes almost tearful, that ordinates were dangerous things to trifle with. All in vain. More theorems went on to my cuff than into my head. Never did chalk do so much work to so little purpose. And, therefore, it came that Furnace Second was reduced to zero in Prof. Surd's estimation. He looked upon me with all the horror which an unalgebraic nature could inspire. I have seen the professor walk around an entire square rather than meet the man who had no mathematics in his soul.

For Furnace Second were no invitations to Professor Surd's house. Seventy of the class supped in delegations around the periphery of the professor's tea-table. The seventy-first knew nothing of the charms of that perfect ellipse, with its twin bunches of fuchsias and geraniums in gorgeous precision at the two foci.

This, unfortunately enough, was no trifling deprivation. Not that I longed especially for segments of Mrs. Surd's justly celebrated lemon pies; not that the spheroidal damsons of her excellent preserving had any marked allurements; not even that I yearned to hear the professor's jocose table-talk about binomials, and chatty illustrations of abtruse paradoxes. The explanation is far different. Prof. Surd had a daughter. Twenty years before he made a proposition of marriage to the present Mrs. S. He added a little corollary to his proposition not long after. The corollary was a girl.

Abscissa Surd was as perfectly symmetrical as Giotto's circle, and as pure, withal, as the mathematics her father taught. It was just when spring was coming to extract the roots of frozen-up vegetation that I fell in love with the corollary. That she herself was not indifferent I soon had reason to regard as a self-evident truth.

The sagacious reader will already recognize nearly all the elements necessary to a well-ordered plot. We have introduced a heroine, inferred a hero, and constructed a hostile parent after the most approved model. A movement for the story

a *Deus ex machina*, is alone lacking. With considerable satisfaction I can promise a perfect novelty in this line, a *Deus ex machina* never before offered to the public.

It would be discounting ordinary intelligence to say that I sought with unwearying assiduity to figure my way into the stern father's good will; that never did dullard apply himself to mathematics more patiently than I; that never did faithfulness achieve such meager reward. Then I engaged a private tutor. His instructions met with no better success.

My tutor's name was Jean Marie Rivarol. He was a unique Alsatian —though Gallic in name, thoroughly Teuton in nature; by birth, a Frenchman; by education, a German. His age was thirty; his profession, omniscience; the wolf at his door, poverty; the skeleton in his closet, a consuming, but unrequitted passion. The most recondite principles of practical science were his toys; the deepest intricacies of abstract science, his diversions. Problems which were foreordained mysteries to me were to him as clear as Tahoe water. Perhaps this very fact will explain our lack of success in the relation of tutor and pupil; perhaps the failure is alone due to my own unmitigated stupidity. Rivarol had hung about the skirts of the university for several years; supplying his few wants by writing for scientific journals, or by giving assistance to students who, like myself, were characterized by a plethora of purse and a paucity of ideas; cooking, studying, and sleeping in his attic lodgings; and prosecuting queer experiments all by himself.

We were not long discovering that even this eccentric genius could not transplant brains into my deficient skull. I gave over the struggle in despair. An unhappy year dragged its slow length around. A gloomy year it was, brightened only by occasional interviews with Abscissa, the Abbie of my thoughts and dreams.

Commencement-day was coming on apace. I was soon to go forth, with the rest of my class, to astonish and delight a waiting world. The professor seemed to avoid me more than ever. Nothing but the conventionalities, I think, kept him from shaping his treatment of me on the basis of unconcealed disgust.

At last, in the very recklessness of despair, I resolved to see him, plead with him, threaten him, if need be, and risk all my fortunes on one desperate chance. I wrote him a somewhat defiant letter, stating my aspirations, and, as I flattered myself, shrewdly giving him a week to get over the first shock of horrified surprise. Then I was to call and learn my fate.

During the week of suspense, I nearly worried myself into a fever. It was first crazy hope, and then saner despair. On Friday evening, when I presented myself at the professor's door, I was such a haggard, sleepy, dragged-out specter, that even Miss Jocasta, the harsh-favored maiden sister of the Surd's, admitted me with commiserate regard, and suggested pennyroyal tea.

Prof. Surd was at a faculty-meeting. Would I wait?

Yes, till all was blue, if need be. Miss Abbie?

Abscissa had gone to Wheelborough to visit a school friend. The aged maiden hoped I would make myself comfortable, and departed to the unknown haunts which knew Jocasta's daily walk.

Comfortable! But I settled myself in a great uneasy chair and waited, with the contradictory spirit common to such junctures, dreading every step lest it should herald the

man whom, of all men, I wished to see.

I had been there at least an hour, and was growing right drowsy.

At length Prof. Surd came in. He sat down in the dusk opposite me, and I thought his eyes glinted with malignant pleasure as he said, abruptly:

"So, young man, you think you are a fit husband for my girl?"

I stammered some inanity about making up in affection what I lacked in merit; about my expectations, family, and the like. He quickly interrupted me.

"You misapprehend me, sir. Your nature is destitute of those mathematical perceptions and acquirements which are the only sure foundations of character. You have no mathematics in you. You are fit for treason, stratagems, and spoils.—Shakespeare. Your narrow intellect can not understand and appreciate a generous mind. There is all the difference between you and a Surd, if I may say it, which intervenes between an infinitesimal and an infinite. Why, I will even venture to say that you do not comprehend the Problem of the Couriers!"

I admitted that the Problem of the Couriers should be classed rather without my list of accomplishments than within it. I regretted this fault very deeply, and suggested amendment. I faintly hoped that my fortune would be such—

"Money!" he impatiently exclaimed. "Do you seek to bribe a Roman Senator with a penny whistle? Why, boy, do you parade your paltry wealth, which, expressed in mills, will not cover ten decimal places, before the eyes of a man who measures the planets in their orbits, and close crowds infinity itself?"

I hastily disclaimed any intention of obtruding my foolish dollars, and he went on:

"Your letter surprised me not a little. I thought *you* would be the last person in the world to presume to an alliance here. But having a regard for you personally,"—and again I saw malice twinkle in his small eyes—"and still more regard for Abscissa's happiness, I have decided that you shall have her—upon conditions. Upon conditions," he repeated, with a half-smothered sneer.

"What are they?" cried I, eagerly enough. "Only name them."

"Well, sir," he continued, and the deliberation of his speech seemed the very refinement of cruelty, "you have only to prove yourself worthy an alliance with a mathematical family. You have only to accomplish a task which I shall presently give you. Your eyes ask me what it is. I will tell you. Distinguish yourself in that noble branch of abstract science in which, you can not but acknowledge, you are at present sadly deficient. I will place Abscissa's hand in yours whenever you shall come before me and square the circle to my satisfaction. No! That is too easy a condition. I should cheat myself. Say perpetual motion. How do you like that? Do you think it lies within the range of your mental capabilities? You don't smile. Perhaps your talents don't run in the way of perpetual motion. Several people have found that theirs didn't. I'll give you another chance. We were speaking of the problem of the couriers, and I think you expressed a desire to know more of that ingenious question. You shall have the opportunity. Sit down some day, when you have nothing else to do, and discover the principle of infinite speed. I mean the law of motion which shall accomplish an infinitely great distance in an infinitely short time. You may mix in a little practical mechanics, if you

choose. Invent some method of taking the tardy courier over his road at the rate of sixty miles a minute. Demonstrate me this discovery (when you have made it!) mathematically, and approximate it practically, and Abscissa is yours. Until you can, I will thank you to trouble neither myself nor her."

I could stand his mocking no longer. I stumbled mechanically out of the room, and out of the house. I even forgot my hat and gloves. For an hour I walked in the moonlight. Gradually I succeeded to a more hopeful frame of mind. This was due to my ignorance of mathematics. Had I understood the real meaning of what he asked, I should have been utterly despondent.

Perhaps this problem of sixty miles a minute was not so impossible after all. At any rate I could attempt, though I might not succeed. And Rivarol came to my mind. I would ask him. I would enlist his knowledge to accompany my own devoted perseverance. I sought his lodgings at once.

The man of science lived in the fourth story, back. I had never been in his room before. When I entered, he was in the act of filling a beer mug from a carboy labeled *Aqua fortis*.

"Seat you," he said. "No, not in that chair. That is my petty cash adjuster." But he was a second too late. I had carelessly thrown myself into a chair of seductive appearance. To my utter amazement it reached out two skeleton arms and clutched me with a grasp against which I struggled in vain. Then a skull stretched itself over my shoulder and grinned with ghastly familiarity close to my face.

Rivarol came to my aid with many apologies. He touched a spring somewhere and the petty cash adjuster relaxed its horrid hold. I placed myself gingerly in a plain cane-bottomed rocking-chair, which Rivarol assured me was a safe location.

"That seat," he said, "is an arrangement upon which I much felicitate myself. I made it at Heidelberg. It has saved me a vast deal of small annoyance. I consign to its embraces the friends who bore, and the visitors who exasperate me. But it is never so useful as when terrifying some tradesman with an insignificant account. Hence the pet name which I have facetiously given it. They are invariably too glad to purchase release at the price of a bill receipted. Do you well apprehend the idea?"

While the Alsatian diluted his glass of *Aqua fortis*, shook into it an infusion of bitters, and tossed off the bumper with apparent relish, I had time to look around the strange apartment.

The four corners of the room were occupied respectively by a turning-lathe, a Rhumkorff Coil, a small steam-engine and an orrery in stately motion. Tables, shelves, chairs and floor supported an odd aggregation of tools, retorts, chemicals, gas-receivers, philosophical instruments, boots, flasks, paper-collar boxes, books diminutive and books of preposterous size. There were plaster busts of Aristotle, Archimedes and Compte, while a great drowsy owl was blinking away, perched on the benign brow of Martin Farquhar Tupper. "He always roosts there when he proposes to slumber," explained my tutor. "You are a bird of no ordinary mind. *Schlafen Sie wohl.*"

Through a closet door, half open, I could see a human-like form covered with a sheet. Rivoral caught my glance.

"That," said he, "will be my master-piece. It is a Microcosm, an Android, as yet only partially complete. And why not? Albertus Magnus

constructed an image perfect to talk metaphysics and confute the schools. So did Sylvester II.; so did Robertus Greathead. Roger Bacon made a brazen head that held discourses. But the first named of these came to destruction. Thomas Aquinas got wrathful at some of its syllogisms and smashed its head. The idea is reasonable enough. Mental action will yet be reduced to laws as definite as those which govern the physical. Why should not I accomplish a mannikin which shall preach as original discourses as the Rev. Dr. Allchin, or talk poetry as mechanically as Paul Anapest? My Android can already work problems in vulgar fractions and compose sonnets. I hope to teach it the positive philosophy."

Out of the bewildering confusion of his effects Rivarol produced two pipes and filled them. He handed one to me.

"And here," he said, "I live and am tolerably comfortable. When my coat wears out at the elbows I seek the tailor and am measured for another. When I am hungry I promenade myself to the butcher's and bring home a pound or so of steak, which I cook very nicely in three seconds by this oxy-hydrogen flame. Thirsty, perhaps, I send for a carboy of *Aqua fortis*. But I have it charged, all charged. My spirit is above any small pecuniary transaction. I loathe your dirty greenbacks, and never handle what they call scrip."

"But are you never pestered with bills?" I asked. "Don't the creditors worry your life out?"

"Creditors!" grasped Rivarol. "I have learned no such word in your very admirable language. He who will allow his soul to be vexed by creditors is a relic of an imperfect civilization. Of what use is science if it can not avail a man who has accounts current? Listen. The moment you or any one else enters the outside door this little electric bell sounds me warning. Every successive step on Mrs. Grimler's staircase is a spy and informer vigilant for my benefit. The first step is trod upon. That trusty first step immediately telegraphs your weight. Nothing could be simpler. It is exactly like any platform scale. The weight is registered up here upon this dial. The second step records the size of my visitor's feet. The third his hight, the fourth his complexion, and so on. By the time he reaches the top of the first flight I have a pretty accurate description of him right here at my elbow, and quite a margin of time for deliberation and action. Do you follow me? It is plain enough. Only the A B C of my science."

"I see all that," I said, "but I don't see how it helps you any. The knowledge that a creditor is coming won't pay his bill. You can't escape unless you jump out of the window."

Rivarol laughed softly. "I will tell you. You shall see what becomes of any poor devil who goes to demand money of me—of a man of science. Ha! ha! It pleases me. I was seven weeks perfecting my Dun Suppressor. Did you know,"—he whispered exultingly,—"did you know that there is a hole through the earth's center? Physicists have long suspected it; I was the first to find it. You have read how Rhuyghens, the Dutch navigator, discovered in Kerguellen's Land an abysmal pit which fourteen hundred fathoms of plumb-line failed to sound. Herr Tom, that hole has no bottom! It runs from one surface of the earth to the antipodal surface. It is diametric. But where is the antipodal spot? You stand upon it. I learned this by the merest chance. I was deep-digging in Mrs. Grimler's cellar, to bury a poor cat I had sacri-

ficed in a galvanic experiment, when the earth under my spade crumbled, caved in, and wonder stricken I stood upon the brink of a yawning shaft. I dropped a coal-hod in. It went down, down, down, bounding and rebounding. In two hours and a quarter that coal-hod came up again. I caught it and restored it to the angry Grimler. Just think a minute. The coal-hod went down, faster and faster, till it reached the center of the earth. There it would stop, were it not for acquired momentum. Beyond the center its journey was relatively upward, toward the opposite surface of the globe. So, losing velocity, it went slower and slower till it reached that surface. Here it came to rest for a second and then fell back again, eight thousand odd miles, into my hands. Had I not interfered with it, it would have repeated its journey, time after time, each trip of shorter extent, like the diminishing oscillations of a pendulum, till it finally came to eternal rest at the center of the sphere. I am not slow to give a practical application to any such grand discovery. My Dun Suppressor was born of it. A trap, just outside my chamber door: a spring in here: a creditor on the trap:—need I say more?"

"But isn't it a trifle inhuman?" I mildly suggested. "Plunging an unhappy being into a perpetual journey to and from Kerguellen's Land, without a moment's warning!"

[TO BE CONTINUED.]

Of about 600 graduates sent out from Rochester University 195 became clergymen, 116 lawyers, 155 business men, 28 physicians, 75 professional teachers, 22 professors of colleges or professional schools, 12 journalists, one astronomer, and one geologist.

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OUR WORK.

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EDITORIAL NOTES.

MUSIC LESSONS.—There is nothing that school-girls are more liable to make mistakes about than the taking of music lessons; and if we should relate our experience, you would understand why we presume to give advice on the subject. There comes a time in almost every school-girl's life when she thinks she must take music lessons. There are several things that may bring this crisis upon her. It may be that she loves music for itself—longs to master the science, that she may give expression upon some instrument to the melody in her own soul. It may be that she admires those among her companions who play; and imagining it to be the one thing necessary to make an accomplished lady, determines that she must learn to play. Or it may be that she takes it up simply as a trade, by which she may gain a livelihood.

Music is a good thing, girls; but be careful how you rush into it. Do not take music lessons because other people do; in fact, do not do any thing because other people do. To play well, requires years of faithful study and persistent drumming; and if your object is simply show, be assured your patience will not hold out,

and to play poorly will give you but little satisfaction. If you have time and money, and a love for music, by all means take lessons; but if you lack the love, you can find better investment for time and money. If you have talent for music, but have no time and money for lessons without robbing other studies, you had better give up all thoughts of learning to play, at least until you have mastered the fundamental branches of an education.

There is one thing you can all do, and all ought to do—learn vocal music. Your voice may be poor, very poor, yet you owe it to yourself and your friends to make it better. You may never be able to move an audience, but you will be able to lighten the cares of your own daily life, and to move those who listen to love, and not to criticise, which is of far more importance to you. Learn songs, beautiful songs, that express sentiments that never grow old. In times of sorrow they will come up to comfort you, in times of joy they will give expression to your rapture. When you come to have a home of your own, and there are little restless ones to soothe, you will find nothing so good as one of the dear old songs of your girlhood. When you want to point out the heavenly way to the little prattlers about you, you can do it in no more effective way than by singing to them, and with them, sweet gospel songs. It is of far more importance to cultivate your voice than your fingers, and this you can do without neglecting other duties. The time required will scarcely be missed, and the fee for instruction is small in any place, while here in Merom vocal music is taught free.

I will listen to any one's convictions; but pray keep your doubts to yourself. I have plenty of mine own.—[Goethe.

READING-ROOM. — The following periodicals are to be found upon the tables of the college reading-room: "Littell's Living Age," "Harper's Magazine," "Scribner's Monthly," "Phrenological Journal," "Popular Science Monthly," "Indiana School Journal," "OUR WORK," "Cincinnati Daily Enquirer," "Cincinnati Daily Gazette," "Indianapolis Daily Journal," "Harper's Weekly," "Indianapolis Sun," "Semi-Weekly Inter-Ocean," "New York World," "New York Tribune," "St. Louis Globe-Democrat," "General Baptist Herald," "Herald of Gospel Liberty," "New England Journal of Education," "Dwight's Journal of Music," "New York Weekly Witness," "Church Union," "Alliance Monitor," "Scientific American," "Sullivan County Union," and "Sullivan County Democrat." Upon the shelves are many valuable books of reference, among them "Appleton's American Cyclopedia." Students, you should not fail to spend some time there each day. Probably most of you have an ideal plan for a continued course of reading, to be carried out sometime after the hurry of school-life is over. It is quite probable that you will never find time for such a course of reading, and if you do, a little foretaste will only enhance its pleasure. Whenever you find, in text-book or newspaper, an allusion to something you do not understand, consult the books that are most likely to give you light, and you will soon find that each day brings its own course of reading.

L. H. Cheney, principal of the Southeast State Normal School, Cape Girardeau, Mo., was killed a month ago in Tennessee, by the caving in of an embankment. He was conducting a geological excursion.

Palestine is about one-fourth the size of New York.

SCIENTIFIC INTELLIGENCE.

Bathe weak eyes, before retiring at night, with a little sugar dissolved in warm water.

A little strong soap lather mixed with the starch will prevent flat-irons sticking to linen.

Fine gold will melt at 2,016° Fah.; pure copper at 1,994°; fine silver at 1,873°; and pure spelter at 773°.

Kerosene flames are readily extinguished by throwing a rug or cloth over them. But cloth is not always in the kitchen, where kerosene accidents are most likely to occur. Flour is recommended as a substitute. Thrown upon the flames, it quickly absorbs the fluid and deadens the flame.—*Scientific American.*

Speaking of sunflowers, the *Maryland Farmer* says: For absorbing malaria, and preventing diseases caused by malarial influences, for prime food for fowls, for a home remedy, sure and safe, for founder in your horses, and for market, as a profitable seed to be sold for making oils, be sure to sow sunflower seed.

At the National Glass Company's Works, Bellaire, Ohio, lamp-chimneys are made by a process resembling that of De la Bastie. A local newspaper writer mentions having seen an eight-penny nail driven through a board an inch and a half thick with one of these chimneys of hardened glass as a hammer.

We have made a rule for calculating the horse-power of steam engines, by which we get rid of nearly two-thirds of the figures. It is as follows: Square the diameter of the cylinder, multiply by length of stroke in inches, multiply by the number of revolutions per minute, multiply by the pressure of steam, multiply by four as a permanent number, and cut off six figures to the right.

A very good impression of any article of metal having a flat ornamented surface, may be taken by wetting some note paper with the tongue and smoking it over a gas flame. The article is then pressed upon the smoked part, when, if the operation be carefully conducted, a clear impression will appear. This can be made permanent by drawing the paper through milk, and afterward drying it.

An ingenious toy, apparently of Japanese origin, has recently been introduced into London. It consists of a small picture, on paper, of an individual pointing a firearm at an object—bird, target, or second person. By the application of the hot end of a match, just blown out, to the end of the gun, the paper commences to smolder toward the object aimed at, and in no other direction. When it is reached, a report is heard, from the explosion of a small quantity of fulminating material.

In parts of Missouri dry thunderstorms are quite frequent. During these storms the thunder rattles overhead, but not a drop of rain falls. A correspondent in the "Popular Science Monthly" thinks that the white mist that is observed opposite to the sun is rain which is rolled back by the stratum of hot air on the earth's surface. If in that locality the earth were shaded by trees, we have no doubt but that the rain would reach the earth. We have discovered the same phenomonon over the high and heated bluffs at Merom.

In Algeria there is a river of genuine ink. It is formed by the union of two streams, one coming from a region of ferruginous soil, the other draining a peat swamp. The water of the former is strongly impregnated with iron; that of the latter with gallic acid. When the two waters mingle, the acid of the one

unites with the iron of the other, forming a true ink. We are familiar with a stream called Black Brook, in the northern part of this state, the inky color of whose water is evidently due to like conditions.—*Scientific American.*

A fireman's suit has just been invented by a Swede, which is certainly a wonderfully useful invention. The suit is made of two layers, the inner one of india-rubber, the outer one of leather. The head is protected by a diver's helmet. By means of a piece of hose attached to the girdle, air, which has been cooled by coming in contact with water, is forced between these two layers of clothing, passing out at the eye-piece, and water is distributed over the whole outer covering of the body. With this suit on, the inventor, Oestberg, stood for a long time in the middle of a pile of burning boxes and logs, without receiving the least injury.

W. S. W. says: I have read of drowned persons being found by putting mercury on pieces of bread and letting them float on the water in which the bodies were supposed to be. The bread floated till it came over the bodies, and then sank, it being supposed that the mercury was attracted by articles of gold jewelry on the bodies. Is this so? Answer: The statement is not true. The most delicate instruments have failed to determine the existence of any attraction between the two metals, save the force of chemical affinity which acts between the molecules at extremely minute distances. This, also, answers several other correspondents.—*Scientific American.*

There is an eight-day clock in Paris, which chimes the quarters, plays three tunes every twelve hours, or at any intervals required. The hands go round as follows: One once a minute; one once an hour; one once a week; one once a month; one once a year. It shows the moon's age, the rising and setting of the sun, the time of high and low water, half ebb, and half flood; and there is a curious contrivance to represent the water, which rises and falls, lifting some ships at high water tide as if they were in motion, and, as it recedes, leaving them dry on the sands. The clock shows the hour of the day, the day of the week, the day of the month, the month of the year; and in the day of the month provision is made for the long and the short months. It shows the signs of the zodiac; it strikes or not, and chimes or not, as may be desired; and it has an equation table, showing the difference between the clock and the sun for every day in the year.

"Necessity," it is said, "is the mother of invention," and this proposition has never, probably, been more perfectly verified than in the construction of a leveling instrument, which has been in use for years in the surveying classes of Union Christian College. The college trustees, owing to a scarcity of funds, have found it impossible to furnish a level; hence Prof. McHenry was led to invent and construct one, which has no superior in the field. The instrument consists of a wooden arm, four feet in length, and three inches square, so arranged as to be able to be mounted on the Jacob's staff of a compass when in use. The lower side contains a groove, in which is placed a piece of tin spouting, one inch in diameter, traveling the whole length of the arm, lacking an inch at each end. Each end of this tin tube connects with an upright tube of glass, one-fourth of an inch in diameter, one foot high, open at the top, and supported by

passing down through the wooden arm to the tin spouting. The glass is joined to the tin (and the joints also rendered water-tight) by means of common sealing-wax. It can readily be seen that when water is poured in one tube of glass, it will fill the horizontal tube of tin, and rise to the same hight in each glass tube. The level is thus always determined, and the hight on the leveling-rod can readily be ascertained by sighting along the surface of the water in each tube.

Mr. Bertolotto, the well-known educator of the flea, has had great success in this line. The insects he employs appear to be the species of flea common to dogs. The first lesson, he says, is to put the insects in a small circular glass box, where, by jumping and knocking their heads against the glass for a day or two, the idea is finally beaten into them that it is useless to jump; and during the remainder of their natural lives, to wit, about eight months, they are content to crawl. Having corrected their intellects in regard to jumping, the instructor now fastens a delicate pair of wire nippers to the middle part of the flea's body; to the nippers any desired form of miniature vehicle, such as a wheelbarrow, a car, a wagon, etc., is attached, and the flea, thus harnessed, trots away with the load, to the great amusement of the looker-on. The professor harnesses his insect pupils into a great variety of other positions, and makes them perform many curious duties, such as the operation of a fortune-telling wheel, orchestra playing, racing, etc. They are allowed to feed twice daily upon the instructor's arm. It remains for Mr. Darwin and his compeers to determine what effect this system of insect education is likely to have upon the habits and development of future broods.

OUR EXCHANGES.

For a "teacher's magazine" recommend me to the *Ohio Educational Monthly*. It is the peer of any.

The High School is all the way from Omaha, Nebraska, yet as fresh and attractive as any of our neighbors.

The College Herald, Lewisburg University, Pennsylvania, has a good article on "Long and Short Courses of Study."

We have read the *Indiana School Journal* for October "clear through"—from Alpha to Omega—not even omitting the advertisements. To say we like it, "draws" it but feebly.

The first number of the *Parents' and Teachers' Monthly* is before us. It commences well. We trust that it will succeed in interesting the parents more fully in our schools.

The School Bulletin and Northwestern Journal of Education, edited by S. R. Winchell, Milwaukee, Wisconsin, is to the west and northwest what the *New England Journal of Education* is to the east.

The Simpsonian, edited by the students of Simpson College, Indianola, Iowa, has found its way to our door. It will be better after the young editors get the harness well on. Come again; we want to mark the improvements you will doubtless make.

The Western, St. Louis, Missouri, H. H. Morgan, editor, comes to us for October full of good things. If our readers want a first-class journal of education, literature, and art, we can recommend the *Western* as the very best. "Culture and Facts," by L. F. Soldan; "Psychology and Physics," by J. M. Long, and "French Literary Style," are among the most noticeable articles.

We have been a reader of *The*

Earlhamite from the first, but now receive it, for the first time, as an exchange. It is, however, none the less welcome. An article on "Some of our Game Birds," the introduction of which we have just read, promises to be very good and highly instructive. "Magazine Poetry" is worthy of especial notice. If this magazine is a reflector of Earlham College life and thought, the faculty have reason to congratulate themselves. It is a pleasure to turn away from the "swagger" that distinguishes so many of our eastern college journals, and enjoy a quiet hour with the "Friends" at Earlham.

The New York Milliner and Dressmaker, issued monthly by Sharp's Publishing Company, New York, is a "thing of beauty" and "a joy forever." It is a wonder to us that such a large and costly magazine can be sold for $1.00 a year. We pronounce it the cheapest and most valuable illustrated ladies' magazine in the world, for the money. Unlike most fashion magazines, this one contains no foolish "love-sick" stories, but the reading matter is most excellent. It is a repository of fashion, art, science, home culture, and general literature. Send ten cents for a sample copy to Sharp's Publishing Company, 127, 129 and 131 Mercer street, New York.

The Cornell Review is at hand. We welcome it as a worthy exchange—an excellent exponent of an excellent institution. Cornell's Class of '76 is somewhat larger than ours at U. C. C. We give the summary of Cornell's Centennial Class, as clipped from the *Review:*

Whole number in class, 66 (61 men and 5 women;) original number, 151.

Degrees.—B. S., 28, B. C. E., 3; B. A., 7; B. M. E., 6; B. Arch., 5; Ph. B., 3; B. L., 1; B. Agr., 1.

Occupation.—Engineering, 12; law, 10; journalism, 7; architecture, 6; teaching, 4; business, 3; medicine, 3; mechanical engineering, 3; manufacturing, 2; banking 1; physicist, 1; contracting, 1; phylosophy, 1; woman's work, 1; amateur farming, 1; student, 1; chemist, 1; undecided, 8.

Politics.—Independent, 24; Republican, 20; Democrat, 7; liberal, 4; temperance, 2: mixed, 1; conservative, 1; Union League Club, 1; neutral, 1; "not enfranchised," 1; undecided, 1; indifferent, 1; no politics, 2.

Religion.—Independent, 15; Congregational, 9; Presbyterian, 6; Episcopal, 4; Christian, 4; Liberal, 4; Baptist, 3; Monotheist, 2; Unitarian, 2; Protestant, 2; Catholic, 1; Cornellian, 1; Eclectic, 1; Free-Will Baptist, 1; Liberal Baptist, 1; Methodist, 1; New Church, 1; no creed, 1; non-sectarian, 1; Society of Friends, 1; undecided, 1; ——, 4.

Co-Education.—Against, 29; for, 29; indifferent, 3; undecided, 1; ——, 4.

Class Man.—Born August 6, 320, A. D.; age, 1,555 years, 10 months, 8 days; weight, 9,640 pounds; hight, 377 feet, $3\frac{3}{4}$ inches; cost of college course, $142,273.

Averages.—Average age, 23 years, 6 months, 26 days, 4 hours, 54 minutes, 32.7 seconds; oldest man (Miss Moore), 31 years, 3 months; youngest man (Wheelock), 19 years, 10 months, and 7 days; average hight, 5 feet, $8\frac{3}{8}$ inches; tallest man (Ashley), 6 feet, $3\frac{1}{3}$ inches; shortest man (Miss Eddy), 5 feet, 3 inches; average weight, 146 pounds; heaviest man (Garver), 210 pounds; lightest man (Brown), 114 pounds; average cost of college course, $2,155.

Other exchanges received are the *College Record, The School, The Capitol, Robinson Aryus, Sullivan County Union, Carlisle Register, Yale Lit. Magazine, Georgetown College Journal.*

COLLEGE PERSONALS.

Hudson Harlan has gone to Texas.

Wilber E. Smith is teaching the school at Turtle Creek.

Maggie Hays is the latest arrival from the Centennial.

Miss Lu. Baker is teaching school near Carlisle, Indiana.

Died, at Graysville, Indiana, Thos. Gray, on October —, 1876.

Chas. Inman is pedagoging among the pleasant valleys of Texas.

Woodford Newlin, Annapolis, Illinois, is unmarried. Full particulars next month.

M. L. Buff has been very ill for several weeks past; at present writing, he is slowly recovering.

Harvey Johnson, now of Carrollton, Ohio, looked in upon us last month.

Davis Hill and family have been visiting friends at Merom. They are on their way to Kansas, where Mr. Hill will engage in stock-farming.

T. C. Miller, of Terre Haute, stopped with us, on his way to Palestine, last month. He will not attend college this year.

Theodore Brewer, a student of the long ago, one of the best teachers in the county, has become insane. We trust, however, it is only a temporary attack, and that he may speedily recover.

George Buff, Esq., a student here in the early days of the college, candidate on Republican ticket for prosecuting attorney in this judicial district, was defeated. He ran many hundred votes ahead of his ticket, but was not able to overcome the very large Democratic majority of this county. Mr. Buff delivered one of the best speeches of the campaign at Merom, on the Wednesday preceding the election.

E. A. DeVore, class '76, is principal of the Ripley (Ohio) High School, colored department. A good position occupied by a good man.

Died, the child of Pearley E. Gordon, of Robinson, Illinois—aged five or six weeks—October —, 1876.—*Robinson Argus.*

Charles Wallar has commenced the practice of law at Newton, county-seat of Jasper County, Illinois.

Prof. Bruce Carr, agent for Wilson and Hinkle, visited us last month. He has been a reader of OUR WORK from the first, but had never seen the college before. He was somewhat surprised at our solidity.

Elder A. R. Heath can not be idle. He has taken upon himself the arduous duties of general financial agent of the Christian Publishing Association for the states of Indiana and Illinois.

COLLEGE LOCALS.

At the last church meeting, President Smith was elected pastor of the Merom Christian Church for another year.

Sabbath afternoon Bible talks have been instituted by the faculty. The hour thus spent each Sunday is well enjoyed by the students.

Base ball and croquet are not indulged in to any great extent this term.

The College orchard has done well this year, notwithstanding the students have had a pick at it.

WANTED—Words meaningless enough to express the infinitesimality of the student who has attended school for a year, and then refuses to subscribe for his college paper because it costs him the sum of forty cents per term.—*The Simpsonian.*

And now comes one Peggy Petri, and has herself built a new paling

fence. The spirit of improvement is still abroad in Merom.

The seniors have ceased weeping since A. A. Holmes has returned. Poor girls; they *were* lonely.

Gathering hickory-nuts is a favorite pastime with students this term. "Hickory-nuts" is a very popular subject for essays at present with the academic students.

The officers of the Franklin Society are as follows: President, M. P. Ward; vice-president, Joel Myers; secretary, Emma Larr; critic, Wm. Finley; marshal, W. A. Mitchell; editor, Kate Knight; treasurer, Evan Heath.

WEAUBLEAU INSTITUTE.

Weaubleau City, Mo., November, 1876.

WILLIAM J. HAWKINS, Local Editor.

The fourth school year commenced on the 18th of September. Owing to sickness and political excitements the attendance was smaller than we expected, but new students have been entering almost daily, so that the number is now considerably above last year. The four students in the senior year are present, and working earnestly. The junior classes are well attended, also the classes in the common school course are large, being filled with young men and young women who are qualifying themselves for teachers. The teacher of German is succeeding admirably. The general interest manifested by students and patrons, together with the improvements of the school, promises fair for a successful year's labor. Much of the strife and antipathy which has been existing is now giving away, and good feeling is taking its place. About the only difficulty with which it has to contend is hard times. Many young ladies and gentlemen, who are anxious to become students, are compelled to stay away on account of not having sufficient means, though several of these are now laboring and disposing of personal property in order to be prepared for the winter term. With this spirit and energy aroused in the young people, we feel assured that Weaubleau Christian Institute will triumph over all opposition.

PERSONALS.

Mr. John H. Longan is teaching school in St. Clair County.

Mr. John Parker has returned from Iowa, looking very much recuperated by his summer's visit.

Rev. R. Terrill and wife, who have been visiting their relatives in this vicinity, were present at the reorganization of the society. They expressed themselves highly pleased.

Mr. Samuel S. Frazee and Miss Lizzie Heazle, students of the winter term of '75, each took a select school of one pupil on the 10th of September, by uniting themselves together in the "dear" bonds of matrimony.

LOCALS.

Miss T. L. Cooley is editing the *Banner of Light*.

The music department, vocal and instrumental, is under the instruction of S. E. Barber, M. D.

The religious exercises of the Christian Church are conducted by Elder J. Sims, on the second Saturday and Sunday of each month.

The Weaubleau Literary Society was reorganized on Friday evening of the first week. A new constitution and by-laws was adopted, also the name changed to "Platonia So-

ciety." The officers are Mr. Wm. J. Hawkins, president; Mr. M. F. Butler, vice-president; Miss T. L. Cooley, secretary, and Mr. S. J. Smith, treasurer.

The absence of the principal during the first week caused considerable confusion. His absence was occasioned by the severe illness of his wife. For several days he watched over her, fearing that every hour would bring the grim monster death. But he passed by without heeding the great sacrifice that was seemingly waiting his approach. She is now rapidly recovering.

CHRISTIAN BIBLICAL INSTITUTE.

Stanfordville, N. Y., November, 1876.

W. T. Mills, - - Local Editor.

Our school is still at its work; students striving to understand, and professors endeavoring to make plain the way of life, that the future teacher of our people need not be blind, but versed in the mysterious ways of the just One—knowing the services he owes to him and the relations he sustains to man. Although our school is growing in strength and usefulness, yet its patronge does not equal its merit, and thus seats that ought to be filled with young men and women preparing for their responsible positions in life by becoming acquainted with the word of God through the instructions of one of the most consecrated of his servants and humblest of men, are left unoccupied.

To find out the young and worthy of the great family of Christians, and to send them here, is a duty that Christians owe to our Master's cause. The instructions are purely biblical. Men of different denominations listen with equal interest and profit, and are going forth to do good work in the interests of humanity and the service of God.

Our literary society is in good running order. As an evidence of our success, several of our citizens have become our regular visitors. They that come once, come again.

Lately several of our students were taken with the Centennial fever rather badly. From this consideration the directors granted a portion of our holy-day vacation in October, and ten of us, including Professors Swingston and Hulburt, availed ourselves of the opportunity to take the needed remedy. Having "taken in" most of the exhibition, it broke the fever, but as is the case with any great derangement of bodily functions, it left us greatly reduced in strength, yet by a plenty to eat once more, and a goodly portion of sleep, we are fast regaining the equilibrity of constitutional vigor.

PERSONALS.

Dr. Craig's lectures are on the Prophet Isaiah.

Ere this reaches our readers Prof. Hathaway will be "telling us" of "homiletics."

We are told that Prof. Peabody will continue in charge of our vocal *organs*.

Three times a week Prof. Hulburt tries to make music of our discordant voices.

B. F. Clayton, a former student, is located at Jamestown, Ohio.

Among our visitors have been I. C. Goff, O. T. Wyman, David Clark, William Lane, sr., and J. J. Summerbell.

Prof. Howel, formerly of this school, is now superintendent of public schools at New Rochelle, N.

Y., Prof. C. E. Swingston taking his place in the institute.

Several of our students are engaged in regular preaching: Sister Haley, at "The Clove;" Bro. Lane, Hick's Hill; Bro. Helfistien, Bethel; Bro. Hammond, South Westerlo; Bro. Iden, Bartlett's school-house.

PROCTOR ACADEMY.

Andover, N. H., November, 1876.

Rev. A. H. Morrill, A. M., Local Editor.

Five states are represented this term.

A fair prospect for the winter term, which opens November 28th.

Having but few news items, we devote our space this month to productions by our scholars.

Rest.—Rest, sweet rest, nature's balmy restorer. Thou art ever kind to man, but thou art more fully appreciated by him, after toiling long and wearily to penetrate the scientific lore.

Every person, plant, and animal must have rest. Some may need very little, but every living thing must have rest in some way. People rest by sleeping and change of employment, animals by sleeping. Some animals rest a part of each day; others seem to need more, and sleep for months at a time.

The winter provides a rest for the vegetable world. The trees seem to glory in their coming rest. They put on their gay robes for a holiday before the death of their foliage. When the leaves fall, we say they are dead; and the leaf is dead, but its spirit still lives. It lives in a tiny bud; it rests for a time, as all things must rest, and then comes its awakening, when it awakens to a new glory.

Plants take their rest in different ways. Some come to us every season, and we welcome them as annuals; others are welcome as biennials, and still others as perennials. They all require rest, and retire to it in the way and in the time nature designed they should.

Are not these similar to our lives? We flourish for a time, and we should grow bright and beautiful before our final rest, that our spirits might awaken to a glory as bright as the leaf.

We read that rest is of divine origin; for after six days of labor our Creator rested, and granted the boon to every living thing.

Lill. E. Philbrick.

Like and Dislike.—It has been said that no two human countenances are alike, and just so true is it that no two persons are found having precisely the same tastes and talents. Some would find wonderful beauties even in the most common things about us, while others equally intelligent, but having different talents, would pass them by unnoticed. Some are happy while traveling in uninhabited and almost unexplored countries, and there studying the wonders found in those lands, although they often do it at the peril of their lives; while to others the severest punishment that could be inflicted upon them would be to oblige them to pass their lives in that way.

In regard to our "likes and dislikes," as we may term them, custom makes a great difference. What would our grandmothers have thought could they have seen specimens of the dresses in which people of to-day array themselves, with the puffs, flounces, ruffles, and plaitings innumerable? They would

have viewed them with something more than dislike—with perfect disgust. But we, who are used to seeing them, have learned to like them, and perhaps should be as loth to return to their modes of style as they would have been to have adopted ours.

Some kinds of food which people in different parts of the earth consider great delicacies, we should be unwilling to eat. In China, rats are considered nice food, and soups made from the flesh of these charming (?) animals form one of their most tempting dishes. The picture of a Chinaman would seem as incomplete without the usual number of rats, as it would were he destitute of his long and (he thinks) elegant cue, reaching nearly to the ground. These rats may be a different species from ours, but it would be only in cases of extreme necessity that many of us would be willing to partake of that dish, though its richness and sweetness be "praised to the skies." Some of us can say, from experience, that frogs, when properly dressed and cooked, are as pleasing to the taste as chicken; others might not be willing to prove it for themselves.

We have just been learning in Natural History, that in parts of South America the grub of a certain kind of beetle, when roasted or boiled, and seasoned with pepper and salt, is considered the choicest of delicacies. The negroes like their "hoe-cakes," and the Esquimaux their oils. How strange it would seem were we to travel through the different parts of the earth, and notice the great difference in the diet, as well as in the dress and manners of people of the various nations.

We find the same differences in persons. Those whom some may think are as near perfect as it is possible for a human being to be, may be looked upon by others as just the opposite, their presence being almost unendurable. Let us not dislike a person simply because we do not agree with that person in all respects. Let us look for the virtues rather than the faults, and the good, rather than the evil. Were we capable of examining every person, we should be unable to find any but what have some good qualities, though it might be in many cases like the precious one, hard to be got at, yet, when once found, would be the true article. As we were not all made to fill the same office in life, we were of course made differently one from another. But we are certain that each was made for some wise purpose, and every one is to act a part in the great drama—life. May we each act our part rightly, and we shall be sure of our reward.

BERTHA S. BATCHELDER.

BOOK-TABLE.

POCKET MANUAL OF RULES OF ORDER FOR DELIBERATIVE ASSEMBLIES, by Major Henry M. Robert, U. S. A., Chicago; S. C. Griggs & Co. 75 cts.

We have long felt that there was a demand for a manual that would present, in a plain, concise, and unambiguous manner, the rules to be observed in American deliberative assemblies, and we welcome this very successful attempt to meet it. After a most careful examination we pronounce it, without hesitation, the best book published on the subject

treated. To those who have been puzzled to understand one of the ambiguous rules of Cushing's Manual, only found after a half hour's search, this little pocket manual will be especially welcomed and appreciated. By a wonderful arrangement one page contains answers to over two hundred of the most common questions on parliamentary law. It will certainly displace the other manuals.

PRACTICAL BOOK-KEEPING, single and double entry. By John Groesbeck, consulting accountant, author of Business Manual, etc., and Principal of Crittenden's Commercial College. Philadelphia: Eldredge & Brother. $2.00.

In this work the divisions of the subject are presented in a naturally progressive order. It is prepared by a practical business man and a teacher, and hence meets the wants of the class-room. The mechanical execution of the work is excellent. It has been adopted as the text-book on book-keeping in the classes of U. C. College.

THE ILLUSTRATIVE PRACTICAL ARITHMETIC. By Geo. A. Walton, A. M., and Electa N. L. Walton. Boston: Brewer & Tileston.

We must confess that we see no reason why this book should not have remained unpublished. It does not differ very much from dozens of other arithmetics that have preceded it. A new text-book should contain features new and valuable—not found in any other book.

THE NORMAL ELEMENTARY GEOMETRY. By Prof. Edward Brooks, A. M., Principal of Pennsylvania State Normal School, and author of a series of mathematics. Philadelphia: Sower, Potts & Co. 90 cts.

Most of our text-books upon geometry are both too voluminous and difficult, and present the subject so abstractly that when the pupil has finished the study he is frequently unable to make any practical application of it. Another serious defect of our text-books on geometry is the absence of matter for original thought. To overcome these defects the author of this admirable treatise abbreviates and simplifies the subject, anp introduces numerous practical examples and theorems for original thought at the close of each book. 1. In abbreviating, nothing is omitted that is essential to final results. 2. In simplifying, the author gives the simplest, the clearest, and most concise methods of demonstrating theorems. "The method of infinites, as applied to incommensurables, and and the principle of indivisibles, in treating of volumes, have contribuied largely to this simplification. These methods are regarded by some less satisfactory than the ordinary method of *reductio ad absurdum;* but it will be remembered that they have the authority of our most eminent mathematicians, and, being so much more simple and concise, are greatly to be preferred." 3. With the practical examples, the student will thus use the knowledge he has acquired, and he will also bring to the subject an interest not often noticed. 4. By the use of the "Theorems for original thought," the student is taught to reason independently of the book. We have not the time to notice this work further. Suffice it to say, it is our ideal of a model text-book on geometry.

*** Other books remain on our table to be reviewed in our next.

Robert's Rules of Order.

There is no other book in our language of like character, so plain, so concise and reliable. It gives in the simplest form possible all the various rules or points of law or order that can arise in the deliberations of any convention, debating club, literary society, or other organized body, and every rule is complete in itself, and is as easily found as a word in a dictionary. Sent free by mail, for 75 cents, by S. C. GRIGGS & CO, Chicago.

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The music is adapted to the human voice, ranging from the softest flute-like note to a volume of sound unsurpassed by any instrument.

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